

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS

September 15, 2016

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Northwest Region, Portland Office
Portland Harbor Section
700 NE Multnomah Street, #600
Portland, Oregon 97232

HAI Project No. 2708
DEQ ECSI File No. 84

**SUBJECT: Progress Report, NW Natural Site, 7900 NW St. Helens Avenue and
7200 NW Front Avenue, Portland, Oregon**

Mr. Bayuk:

Hahn and Associates, Inc. (HAI) has prepared this monthly Progress Report to summarize Remedial Investigation/Feasibility Study (RI/FS) and source control-related work activities conducted by NW Natural relating to historic manufactured gas plant (MGP) activities at the NW Natural Site during the month of August 2016. NW Natural is completing upland investigation and cleanup activities at the NW Natural Site under the Voluntary Agreement No. ECVC-WMCVC-NWR-94-13 (Voluntary Agreement) between NW Natural and the Oregon Department of Environmental Quality (DEQ).

1.0 Communications and Document Submittals

In correspondence dated August 2, 2016 (William Byrd to Dana Bayuk), Severson Environmental Services, Inc. transmitted the *NW Natural Source Control Groundwater Treatment Facility Residuals Data Package* for the second quarter of 2016.

A teleconference with representatives of DEQ, EPA and NW Natural was conducted on August 2, 2016 to discuss the HC&C system groundwater model potentiometric surface contour and velocity vector figures as provided to DEQ on July 20, 2016.

In correspondence dated August 3, 2016 (Dana Bayuk to Halah Voges, Taku Fuji, and Ben Hung), DEQ provided comments on, and requested a follow-up meeting related to, the *Outline for the Remedial Investigation/Risk Assessment Addendum for OU1, NW Natural Gasco Site*, prepared by HAI and Anchor, QEA, dated May 13, 2016.

In correspondence dated August 5, 2016 (Jen Mott to Dana Bayuk), Anchor QEA, on behalf of NW Natural, transmitted the report entitled *Evaluation of Transducer Drift and Calibration Data, NW Natural Gasco Site*, prepared by Anchor QEA, dated August 5, 2016.

In correspondence dated August 5, 2016 (Tim Stone to Dana Bayuk), Anchor QEA, on behalf of NW Natural, transmitted notification of intent to chemically treat selected Gasco groundwater HC&C system wells to clean / develop screened intervals to improve specific capacities.

In correspondence dated August 9, 2016 (Dana Bayuk to Pradeep Mugunthan), DEQ provided approval of the HC&C model calibration with clarifying comments and requests from review of June 29, 2016 HC&C model workshop materials and related figures provided to DEQ on July 20, 2016.

In correspondence dated August 10, 2016 (Pradeep Mugunthan to Dana Bayuk), Anchor QEA, on behalf of NW Natural, provided DEQ-requested documentation in support of the

use of the Cooper-Jacob method for analysis of single-well pumping test data for the Fill WBZ.

In correspondence dated August 12, 2016 (Dana Bayuk to Tim Stone), DEQ provided comments and requests for additional information related to Anchor QEA's August 5, 2016 *Notification of Intent to Chemically Treat Select Source Control HC&C System Wells*. Responses and the requested information were provided by Anchor QEA in correspondence dated August 12, 2016 (Tim Stone to Dana Bayuk), with DEQ confirmation that comments and requests for additional information were satisfied in correspondence of the same date (Dana Bayuk to Tim Stone). DEQ confirmed approval to proceed with the treatment in correspondence dated August 18, 2016 (Dana Bayuk to Tim Stone).

In correspondence dated August 17, 2016 (Terry Driscoll to Dana Bayuk), ADA, Inc., on behalf of NW Natural, transmitted a memorandum describing a proposed temporary shutdown of the groundwater HC&C system in order to clean a pipeline segment and to incorporate systems to prevent the need for such a shutdown in the future. DEQ provided approval for this temporary shutdown during an August 18, 2016 telephone call with Severson Environmental Services, Inc. (Dana Bayuk to Chip Byrd).

In correspondence dated August 17, 2016 (Jen Mott to Dana Bayuk), Anchor QEA, on behalf of NW Natural, transmitted the *Upland Feasibility Study Work Plan, NW Natural Operable Unit 1*, dated August 17, 2016.

In correspondence dated August 17, 2016 (Bob Wyatt to Alex Liverman), NW Natural provided responses to DEQ's July 14, 2016 comments on the September 2010 *NW Natural Gasco Site Final Stormwater Source Control Data Summary Report*.

Teleconferences with representatives of DEQ, NW Natural, and Siltronic were held on August 18, 2016 (Program Manager Call) and August 30, 2016 (A combined Project and Program Manager Call) to discuss work occurring at the Site.

In correspondence dated August 19, 2016 (Pradeep Mugunthan to Dana Bayuk), Anchor QEA, on behalf of NW Natural, provided DEQ with requested confirmation that the model-predicted groundwater elevations in the LNG basin as shown during an August 2, 2016 conference call were appropriate and do not require revision.

DEQ and NW Natural met August 24, 2016 to discuss the proposed addendum to the Voluntary Agreement.

In correspondence dated August 19, 2016 (Dana Bayuk to Ben Hung) and August 24, 2016, DEQ and Anchor QEA made efforts to establish a date and time for a meeting to review DEQ comments on the OU1 RI/RA Addendum Outline.

In correspondence dated August 25, 2016 (Jen Mott to Dana Bayuk), Anchor QEA, on behalf of NW Natural, transmitted notice of intent to install an additional HC&C system groundwater extraction well (tentatively named PW-17U), with a detailed proposal to follow.

In correspondence dated August 29, 2016 (Terry Driscoll to Rob Burkhart and Dana Bayuk), ADA Associates, Inc. informed DEQ that the temporary shutdown (August 22 to August 25, 2016) of the HC&C system for pipeline maintenance and upgrades was completed and the approved work on the system was successful.

A teleconference with representatives of DEQ, EPA and NW Natural was conducted on August 29, 2016 to discuss items related to planned sensitivity analyses, particle

tracking simulations, and validation of the HC&C groundwater model. A summary of this teleconference, inclusive of an updated schedule for completion of model validation and modeling report preparation, was provided to DEQ in correspondence dated August 31, 2016 (Pradeep Mugunthan to Dana Bayuk).

A meeting with representatives of DEQ and NW Natural was conducted on August 31, 2016 to discuss NW Natural's August 17, 2016 responses and next steps as related to DEQ's comments on the *NW Natural Gasco Site Final Stormwater Source Control Data Summary Report*.

2.0 Field Work

HAI field activities related to monitoring and maintenance of the dense non-aqueous phase liquid (DNAPL) extraction system at surficial fill well locations MW-6-32 and MW-13-30 occurred during August 2016. The system recovered approximately 35 gallons of fluids in August, primarily DNAPL.

Tasks related to maintenance of the HC&C system and the groundwater treatment system were conducted in August 2016, with the system operating under Phase 2 testing parameters since July 21, 2015.

Baseline DNAPL removal as needed to maintain at levels below the top of the well sumps was conducted by Anchor QEA during August 2016 in the following wells near the river shoreline.

- MW-16-45
- MW-26U
- MW-27U
- MW-34L
- MW-38U
- MW-PW-2L
- PW-2L
- PW-6U

On March 31, 2014 NW Natural discontinued routine discharges of treated groundwater to the sanitary sewer (Industrial Wastewater Discharge Permit 500.022). During August 2016 all water was directed to NW Natural's on-site wastewater treatment plant and discharged to the Willamette River consistent with National Pollutant Discharge Elimination System (NPDES) Permit No. 103061 (expires August 31, 2018). Results from NW Natural's NPDES effluent sampling are provided to DEQ in Discharge Monitoring Reports that are submitted on a monthly basis in accordance with the permit. A total of 10,154,146 gallons of treated water were discharged under the NPDES permit during August.

3.0 Anticipated Activities in September and October 2016

NW Natural and DEQ technical working group communications and meetings are anticipated to occur as needed during September and October 2016 to discuss ongoing project tasks.

Planning and preparations for completion of the RI/RA Addendum for the northern portion of the Siltronic property will be underway during the indicated timeframe. NW Natural will work with the Oregon Department of Justice to finalize related revisions to the Voluntary Agreement needed to address DEQ's November 2015 project restructuring determination during this timeframe.

HC&C groundwater model validation, sensitivity analysis and particle tracking simulations are anticipated to occur during this timeframe to be initiated after receipt of DEQ concurrence with the scope and documentation provided in August 31, 2016 e-mail correspondence.

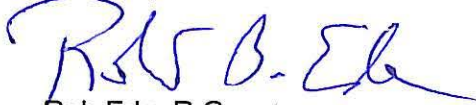
NW Natural will prepare a work plan during the indicated timeframe for DEQ approval to document wet season run-off observations and other activities as needed to evaluate potential stormwater-related interim source control measures at Gasco.

NW Natural will propose revisions to the NW Natural Gasco Monitoring Program (submitted to DEQ on September 12, 2016). The Annual groundwater monitoring event will be initiated once the revised monitoring program is approved by DEQ. The following reports and work plans for the Site have been submitted to DEQ through the date of this progress report. Unless otherwise noted, NW Natural has not received DEQ comments on these documents.

- *Fill WBZ Trench Design Evaluation Report, Gasco/Siltronic*, prepared by Anchor QEA, dated April 8, 2015.
- *Hydraulic Control and Containment (HC&C) System Operation and Maintenance (O&M) Manual*, prepared by Anchor QEA, dated May 1, 2015.
- *HC&C Capture Performance and Monitoring Plan (PMP)*, prepared by Anchor QEA, dated May 1, 2015.
- *Evaluation of Location of Former Industrial Use Water Supply Well Mult 802, NW Natural Gasco Property, Portland, Oregon*, prepared by HAI, dated November 11, 2015.
- *Contaminated Materials Management Plan for the NW Natural Gasco Site*, prepared by Anchor QEA, dated February 23, 2016.
- *NW Natural Groundwater Treatment System Operations and Maintenance Manual*, prepared by Severson Environmental Services, Inc., dated March 2016
- *Gasco Upland FS Data Gaps Investigation Work Plan*, prepared by Anchor QEA dated May 2016 (Initial feedback provided June 27, 2016; Detailed review will be concurrent with *Gasco Upland FS Work Plan, submitted August 17, 2016*)
- Responses to DEQ questions regarding Summary of Data Availability Tables, as provided by HAI on May 18, 2016 and Maul, Foster, & Alongi (MFA) on June 3, 2016.
- *Evaluation of Transducer Drift and Calibration Data, NW Natural Gasco Site*, prepared by Anchor QEA, dated August 5, 2016.
- *Upland Feasibility Study Work Plan, NW Natural Operable Unit 1*, prepared by Anchor QEA, dated August 17, 2016.
- *Groundwater HC&C System Scoping for Sensitivity Analyses, Particle Tracking Simulations, and Model Validation* as provided in e-mail correspondence dated August 31, 2016 (Pradeep Mugunthan to Dana Bayuk).

Should you have any questions, please contact the undersigned.

Sincerely,



Rob Ede, R.G.
Principal

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